

Urban Dwellings for the Digital Nomad

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Abstract

Due to the rapid adoption of cellular and web-based communication, modern cultures are becoming less reliant on fixed environments, moving more frequently for work and play. In this paper, ongoing research by the author will be presented along with design work done by third-year architecture students at The Pennsylvania State University (Spring, 2008). The projects shown explore branding and the use of global shipping standards to promote open-source, mobile prefabrications capable of urban installations. This dwelling, termed a *Jump Box*, explores the possibilities for combining vertical structures, dwellings, and RVs. Examples will be shown of theoretical solutions from Apple, BET (Black Entertainment Television), Burberry, Leatherman, Puma, and Under Armour.

Keywords

Prefabrication, Mobility, Mass Customization, Micro-Architecture, Web Based Configurator, Open Source, Branding, and Sustainability.

Overview

In this paper I will expand upon arguments presented in the book *Digital Nomad*, by authors Makimoto and Manners.¹ Written over a decade ago, the book asserts that continued adoption of mobile technologies will create large-scale societal changes—many of which have already come to pass in recent years. Here, I propose a possible domestic solution for digitally enabled nomads—a solution that relies on open-source standards to encourage the creation of diverse free-market products that are prefabricated. Such a system will permit the creation of mass customized dwell-

ings that are more flexible, adaptable, affordable, recyclable, and mobile. This is a typology that I refer to as a *Jump Box*.

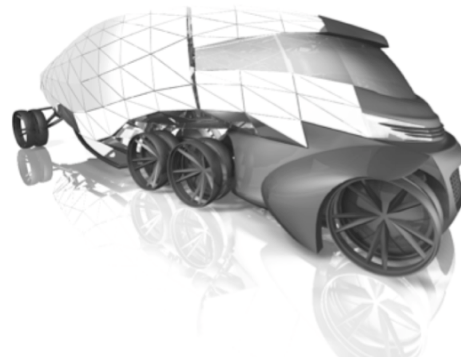


Fig. 1. BET (Black Entertainment Television) Urban Recording Studio – Rendering, by Matt Hoffman

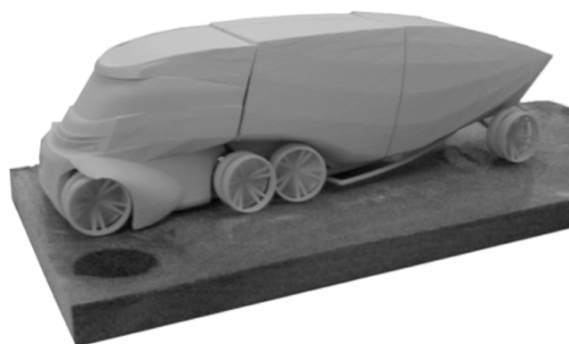


Fig. 2. BET - ZCorp Rapid Prototype Model

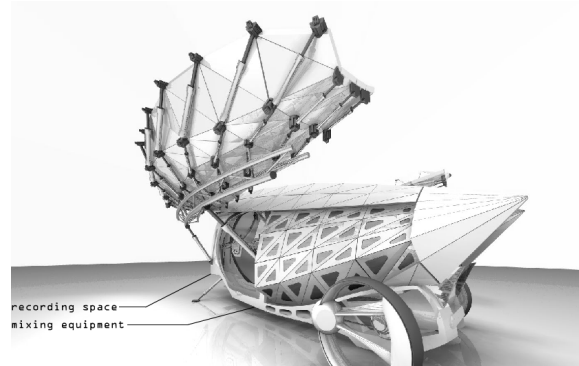


Fig. 3. BET deployed studio

This paper begins with a brief analysis of the cultural context, which identifies the need for a mobile urban solution, then outlines steps necessary to facilitate this product. Throughout, a variety of co-branded solutions envisioned by students illustrate the diverse possibilities inherent in this model.

It should be noted that this paper is focused upon contemporary cultural trends regarding domesticity and possible design solutions; thus, an examination of the regulatory and governmental considerations is beyond the scope of this paper.

Cultural Context

One of the consequences of mobile computing and cellular technology is that people are becoming less reliant upon land-lines for telecom services, enabling 43% to perform part (or all) of their work remotely.² Additionally, people in the U.S. are now moving, on average, once every five years.³ Mobility is on the rise, and so, too, is population growth, projected to go from 6.6 to 8 billion by 2025.⁴ In this scenario, urban areas will grow eighteen times more rapidly than rural ones, resulting in sixty percent of the population projected to live in urban areas by 2030.⁵ Yet city dwelling has already become unaffordable for many. There is tremendous demand for more affordable urban dwellings, and more flexible solutions will increasingly be sought.

One possible solution would permit easy relocation from city to city—simply *moving the dwelling*, rather than repeatedly packing and moving *the contents* of a dwelling. Today, with almost one-third of the adult U.S. population renting their dwellings,⁶ this new typology also has great potential to increase home ownership for low-income people. This is particularly important considering the average price of a new home in the U.S. is \$290,600⁷ and urban housing is even more expensive. With the average wage in the US being \$58,029,⁸ this amount is approximately 1.5 times more than most can afford.

While various forms of mobile dwellings have been in existence since the beginning of the 20th century, both culture and technology may have evolved to a point where a solution for urban environments is no longer a technicolor proposition from Archigram or Superstudio but one that is technically feasible, desirable, and perhaps even inevitable.



Fig. 4. Apple Display Dwelling – remote control via iPhone, by Caryn Brown.



Fig. 5. Apple Display Dwelling, Deployed

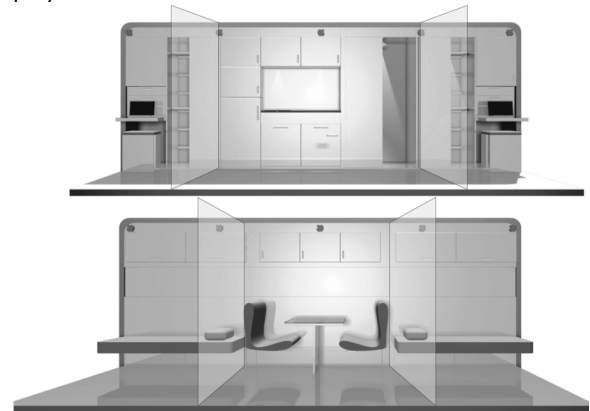


Fig. 6. Apple Display Dwelling – Interior Sections

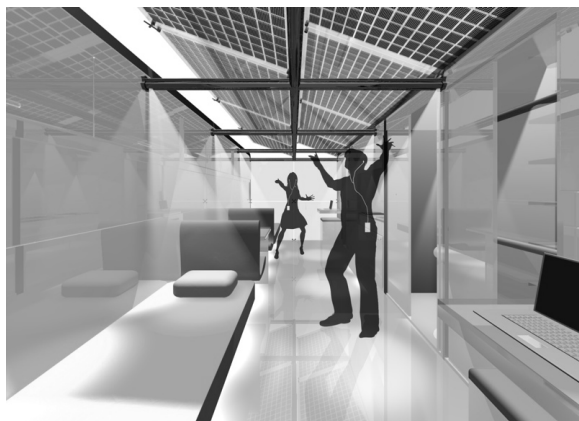


Fig. 7. Apple Display Dwelling – Interior Rendering

Prefab and Mobility

The list of notable design personalities arguing for prefabrication is noteworthy: Le Corbusier in 1919 writes *Mass Production Houses*; Walter Gropius and Adolf Meyer develop *Building Blocks* in 1923; Buckminster Fuller introduces the *Dymaxion House* at Chicago's Marshall Fields department store in 1929; Frank Lloyd Wright introduces *Usonian House* in 1936; industrial designer Henry Dreyfuss and architect Edward Larrabee Barnes collaborate on the design of a prefab house for Vultex Aircraft Company in 1947; Jean Prouvé commissioned by the French government to create twenty-five mass-produced housing units in Meudon, France in 1950; Richard Rogers proposes his *Zip-Up Enclosures* in 1968; and of course, numerous imaginative works by Archigram in the 1960s.

Many agree that *prefabrication is the next frontier*, yet what is rarely recognized is that *mobility is the next frontier for prefabrication*. While prefabrication inherently requires some degree of mobility, it does not necessarily encourage it, with 97% of prefabricated structures moving just once from factory to installation.⁹ On the other end of the spectrum, the RV (Recreational Vehicle) is an oft-overlooked form of prefabrication, perhaps because *it is designed to move*. Due to the ease of mobility and the capability to remain "connected" electronically, increasing numbers are making RVs their full-time homes, as is seen by websites like www.escapees.com and www.fulltimerver.com. Despite impressions, this is a lifestyle embraced by many people who are far from retirement. Mobile lifestyles are becoming so popular that the US postal service announced Premium Mail Forwarding in May, 2005,¹⁰ a service that continually for-

wards mail no matter where one goes or how often this might be.

Where the RV falls short is that urban environments are not hospitable to the rural-bound RV. A secondary challenge is that the aesthetic of many urban dwellers is incompatible with that of the "wood-paneled, la-z-boy-furnished, deep-pile carpeting style" that define current offerings among RVs.

What's "the Hitch?"

To better enable mobile prefabrication and navigate the stylistic divide between existing RVs and chic Jump Boxes, two primary aspects must be addressed: A) improving desirability through branding and B) the development of uniform standards for new structures to host these dwellings.

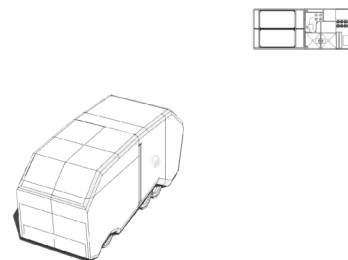


Fig. 8. Leatherman Emergency Relief Unit, by Adam Longenbach

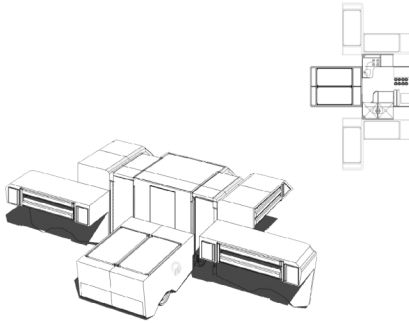


Fig. 10. Leatherman – Deploy 2

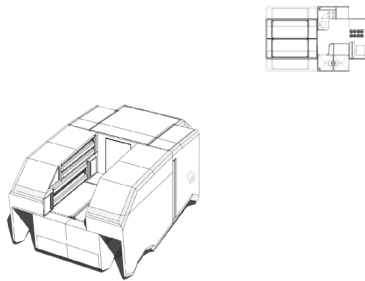
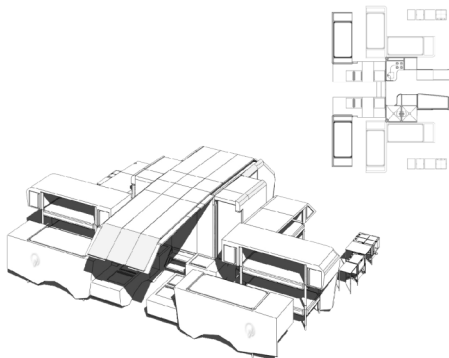


Fig. 9. Leatherman – Deploy 1



Branding and Desirability: Despite numerous well-designed examples, prefabrication as a whole in the US has struggled with perceptual challenges for decades. Initial objections—formed during WWII when mobile homes and travel trailers served as barracks for soldiers—have only deepened due to perceptions of shoddy workmanship, byzantine tax codes, class segregation, and more. Recently, ele-

vated toxicity for FEMA trailers deployed after Hurricane Katrina have only reinforced these negative perceptions.¹¹ However, prefabrication is not a *pre-determined product*, but rather a *method*. This method has potential for increased quality, integration of sustainable materials and technologies, and diminished waste compared to site-built housing, to name but a few.¹² Curiously, not all forms of prefabrication are viewed suspiciously. With one in twelve Americans owning an RV, it is possible that this form of mobile dwelling is the most widely accepted and desirable form of prefabricated dwelling currently in existence.¹³

According to an article by business professor Banwari Mittal, our culture relies heavily upon brand-name products for self-identity.¹⁴ Membership in today's consumer collective is gained through the purchase of celebrated popular products. Oxymoronically, people assert their "individuality" through brands and accessories that customize these purchases—think Harley Davidson. This desire for personalization is one that the Jump Box would excel at, since components would be easily interchangeable. Thus it is essential to create positive brand identity—an aspect that stick-built homes are beginning to pursue with recent co-branding efforts by Martha Stewart with KB Home¹⁵ and Philippe Starck with Shaya Boy-melgreen to create *Downtown* in Manhattan.¹⁶

As Michael Sorkin suggested in his *Harvard Design Magazine* article "Brand Aid," "to create the success of any commercial multiple, the brand is critical. . . . And, of course, celebrity is the main measure of authority in Brand-world."¹⁷ Thus, architects and designers may gain access to wider markets by branding their efforts for Jump Boxes. Instead of trying to launch a brand from a position of obscurity, architects might associate with already recognized and highly desirable brand names.

Uniform Standards: Among current prefabricated offerings many systems are: proprietary, incompatible, and/or require sophisticated tooling. This limits suppliers, requires sole-source solutions, limits development of non OEM (Original Equipment Manufacturers) options, and prevents greater market penetration. With enough shipping containers now in existence to wrap around the equator, two high, inventive dwellings made from these modules (by Wes Jones, Jennifer Siegal, Hybrid Design, LOT-EK, etc.) makes some sense from a purely economic point of view but lack broad

aesthetic appeal.¹⁸ However, these designs do offer a valuable lesson for prefabrication: that of a standardized chassis using existing global transportation techniques. Mobile products based on such a standardized chassis could be customized through online configurators that would allow multiple designers, and producers, to create unique, environmentally responsible, and technologically advanced products that could easily permit *mass customization* in a way predicted sixteen years ago by Joseph Pine.¹⁹

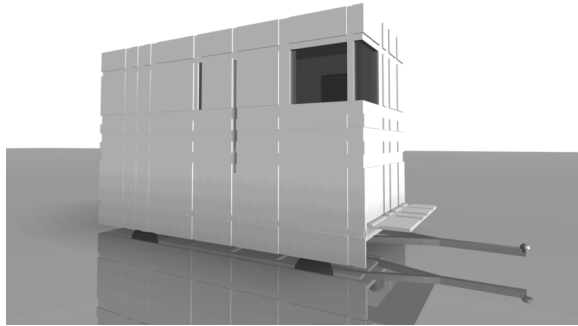


Fig. 12. Burberry – Exterior, by Terri Garlewicz

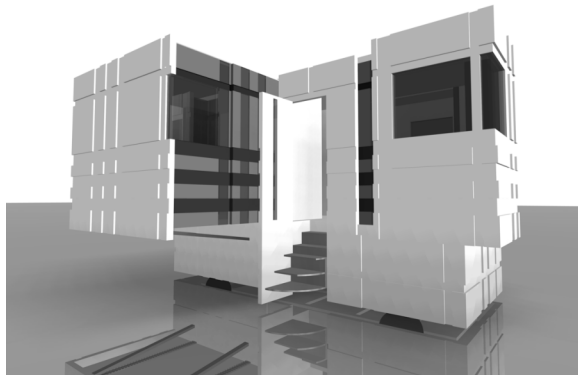


Fig. 13. Burberry Exterior - Deployed

The success of the Jump Box concept relies on the development of rigorous open-source standards available to all. Akin to the bus model of manufacturing in the computer industry (where various components may be swapped in and out of uniform connectors) the chassis is the core component of the Jump Box, while all other components would be configurable. The chassis (much like an automotive frame that carries several body types) is intended to be compatible with the shipping container standards for ships, trains, and trucks. Thus, it will need to perform as a rolling RV chassis, as well as be able to be carried by a variety of transportation techniques, and be housed within structures.

The second aspect of open-source development work is geared toward the creation of dimensional standards above the chassis that will permit universal connectivity for interior and exterior systems. This will permit interchangeability of diverse components. While the Jump Box may expand in a variety of fashions to increase the size while dwelling, when shipped it must fit through the highway key-hole of the interstate system—and may not exceed a maximum of 13'-6" in total shipping height, 8' width, with a length not to exceed 48' to be compatible with all U.S. state limits for the trucking industry. Expanded sizes, too, would require consensus in order for Jump Boxes to be housed in structures.

Mobile products based on such a chassis would allow multiple designers to create products that could easily fit together to permit mass-customization. Like the prefabricated living suites by Piikio Works for the cruise ship industry²⁰, these creations need not look anything like shipping containers. Such a standardized chassis would permit tremendous stylistic diversity, permitting easy upgrades over time as fashions, finances, and technology evolve.

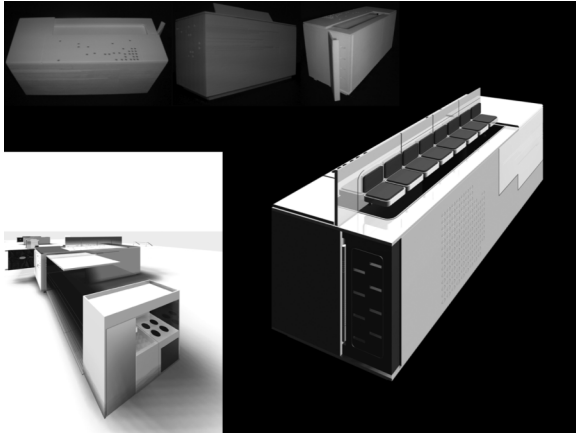


Fig. 14. Puma – Soccer Training Dwelling, by Gino Colan



Fig. 15. Puma, Interior with Gym

Conclusion

Fixed foundation homes have at least four limitations that will be increasingly felt by many—especially by those who are (or those who wish, or need, to be) digital nomads.

First, the absence of substantive feedback loops (loops evident in product-design but mostly absent in architecture) prohibits in-depth analysis, adaptation, and evolution of the home. *Second*, the lack of mass-production techniques prevents greater innovation and integration of new domestic technologies, reduced prices, recycle-ability, and higher quality. *Third*, consumers' desire for brand identity is unfulfilled by most site-built and many pre-fabricated dwellings. And *fourth*, increased

mobility occurring among the populace is neither accommodated, nor enabled by fixed dwellings—which are expensive to acquire and renovate, increasingly located further from urban centers, as well as time-consuming and expensive to move into and out of.

Frei Otto expresses concern for the current architectural climate, writing, "Today's architecture is at a turning point. The big trends of the last decade are outlived and only a few buildings in the world manifest architectural perfection while paving new ways into the future"²¹ It is time for domestic architecture to harness emerging technologies and tap more deeply into consumer desires. Mass production efforts will inevitably give consumers greater choice in how they configure their dwellings and permit improved technological integration. For some, the creation of a product like the Jump Box would permit increasing numbers of highly mobile people to live in a far more enabling fashion than they do now. For others who desire (or require) a more settled existence, it would permit a fixed home to serve as a hospitable base camp for explorations—what Makimoto and Manners suggest as *cerebral nomadism*—or what we call *vacations*.

Certainly there are challenges to this proposition. Today, numerous governing institutions continue to reinforce settlement patterns founded upon agricultural conditions that no longer exist. Among these are voting boundaries, land ownership laws, tax structures, zoning laws, and land based utility infrastructure. In light of current technological considerations, the cost and popularity of urban dwelling, predicted environmental changes, and occupational fluidity, fixed dwellings may at some point in the not very distant future become less desirable than options that more easily enable mobility and technological integration.

If these institutional resistances can evolve, or be overcome, similar mobile solutions will invigorate the lifestyle of the digital nomad, enhance urban dwelling possibilities, and stimulate greater technological innovation for domestic environments. The Jump Box offers numerous design and manufacturing opportunities to unlimited parties, and represents a strategy that is more aligned with current industrial production techniques and cultural desires, much like any other desirable consumer product.

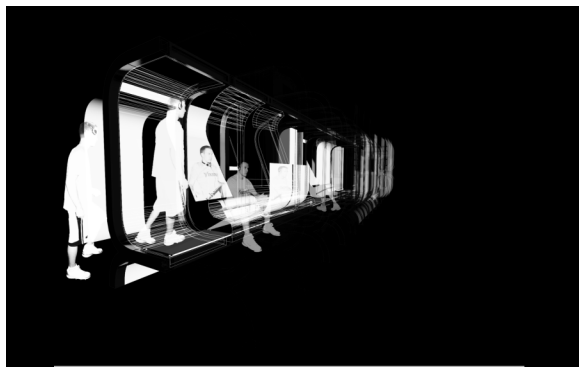


Fig. 16. Under Armour – Flex Dwelling, by Jeffrey Harner

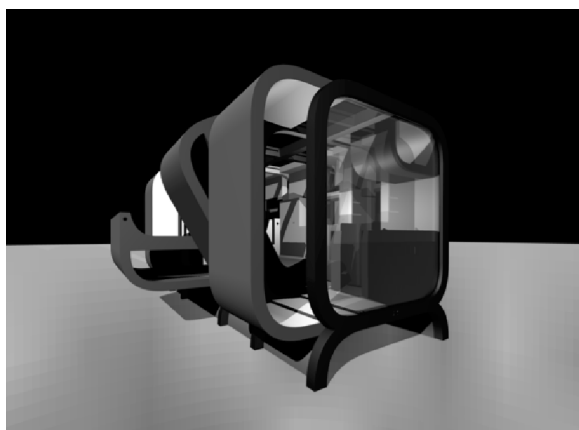


Fig. 17. Under Armour - Deployment

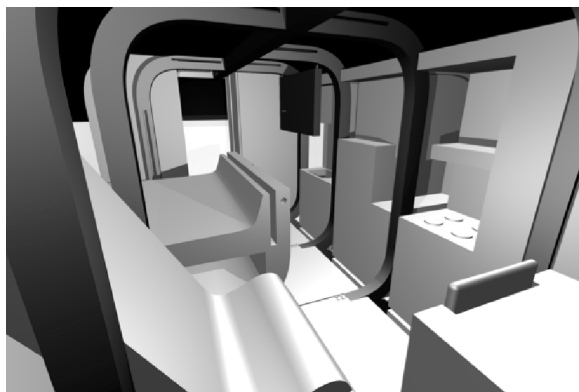


Fig. 18. Under Armour - Interior

Notes

¹ Makimoto, T., and D. Manners, 1997. *Digital Nomad*. Wiley, New York.

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¹⁸ Stewart Taggart, "The 20-Ton Packet," *Wired*, October, 1999.

¹⁹ Joseph Pine, *Mass Customization: The New Frontier in Business Competition* (Cambridge, MA: Harvard Business School Press, 1992).

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